

FIG.1

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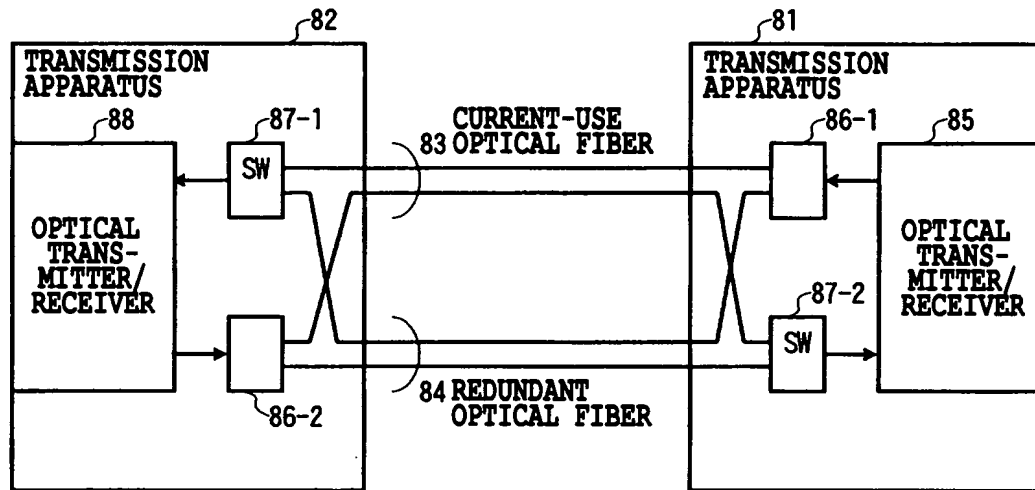


FIG.2

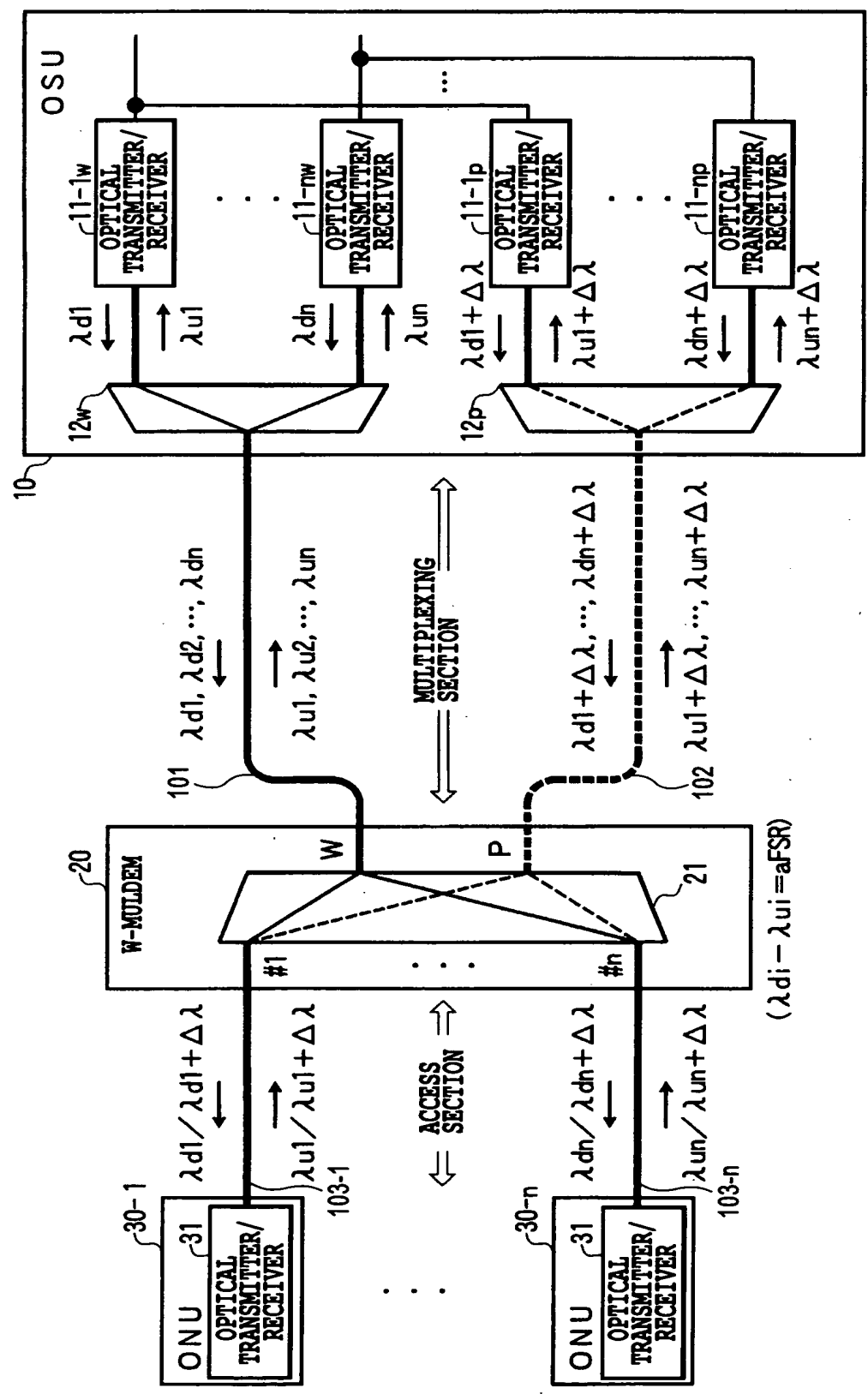


FIG.3

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	W	P
ONU30-1 #1	λ_{d1} λ_{u1}	$\lambda_{d1} + \Delta\lambda (+mFSR)$ $\lambda_{u1} + \Delta\lambda (+mFSR)$
ONU30-2 #2	λ_{d2} λ_{u2}	$\lambda_{d2} + \Delta\lambda (+mFSR)$ $\lambda_{u2} + \Delta\lambda (+mFSR)$
\vdots	\vdots	\vdots
ONU30-n-1 #n-1	λ_{dn-1} λ_{un-1}	$\lambda_{dn-1} + \Delta\lambda (+mFSR)$ $\lambda_{un-1} + \Delta\lambda (+mFSR)$
ONU30-n #n	λ_{dn} λ_{un}	$\lambda_{dn} + \Delta\lambda (+mFSR)$ $\lambda_{un} + \Delta\lambda (+mFSR)$

$$\lambda_{di} - \lambda_{ui} = aFSR$$

FIG.4A

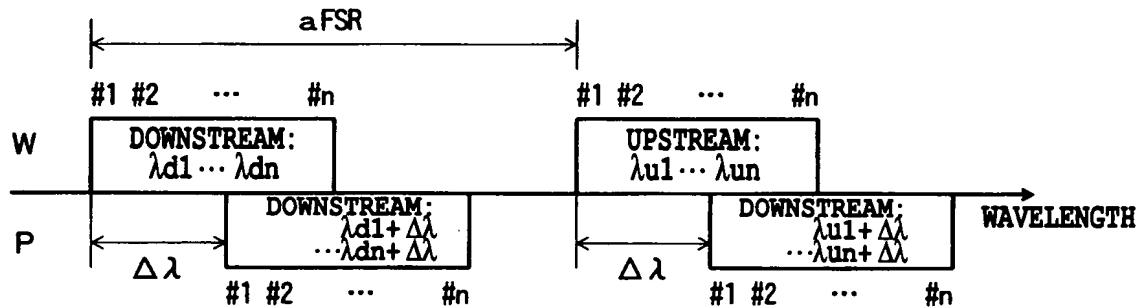


FIG.4B

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	W	P
ONU30-1 #1	λ_{d1} λ_{u1}	λ_{d2} λ_{u2}
ONU30-2 #2	λ_{d2} λ_{u2}	λ_{d3} λ_{u3}
\vdots	\vdots	\vdots
ONU30-n-1 #n-1	λ_{dn-1} λ_{un-1}	λ_{dn} λ_{un}
ONU30-n #n	λ_{dn} λ_{un}	$\lambda_{dn+1}(\lambda_{d1})$ $\lambda_{un+1}(\lambda_{u1})$

$$\Delta\lambda = \lambda_{di+1} - \lambda_{di} = \lambda_{ui+1} - \lambda_{ui}$$

$$(\lambda_{dn+1} = \lambda_{d1} + \text{FSR}, \lambda_{un+1} = \lambda_{u1} + \text{FSR})$$

FIG.5A

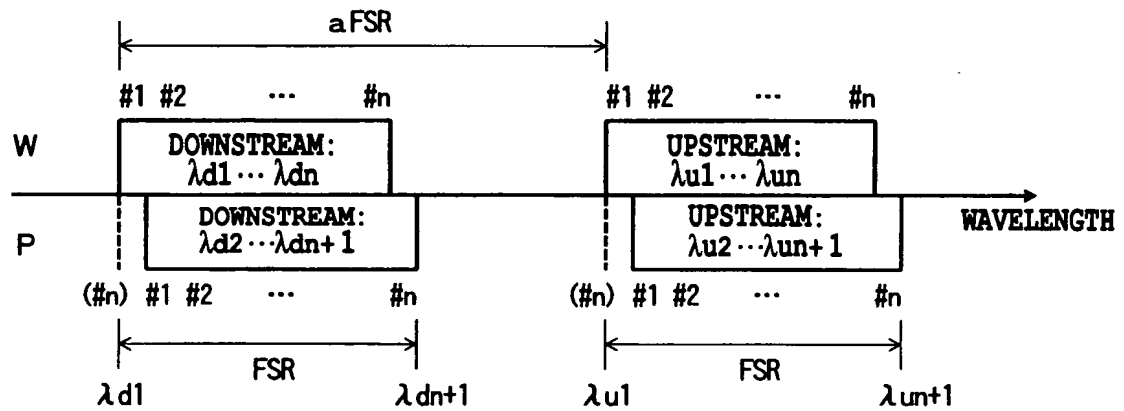


FIG.5B

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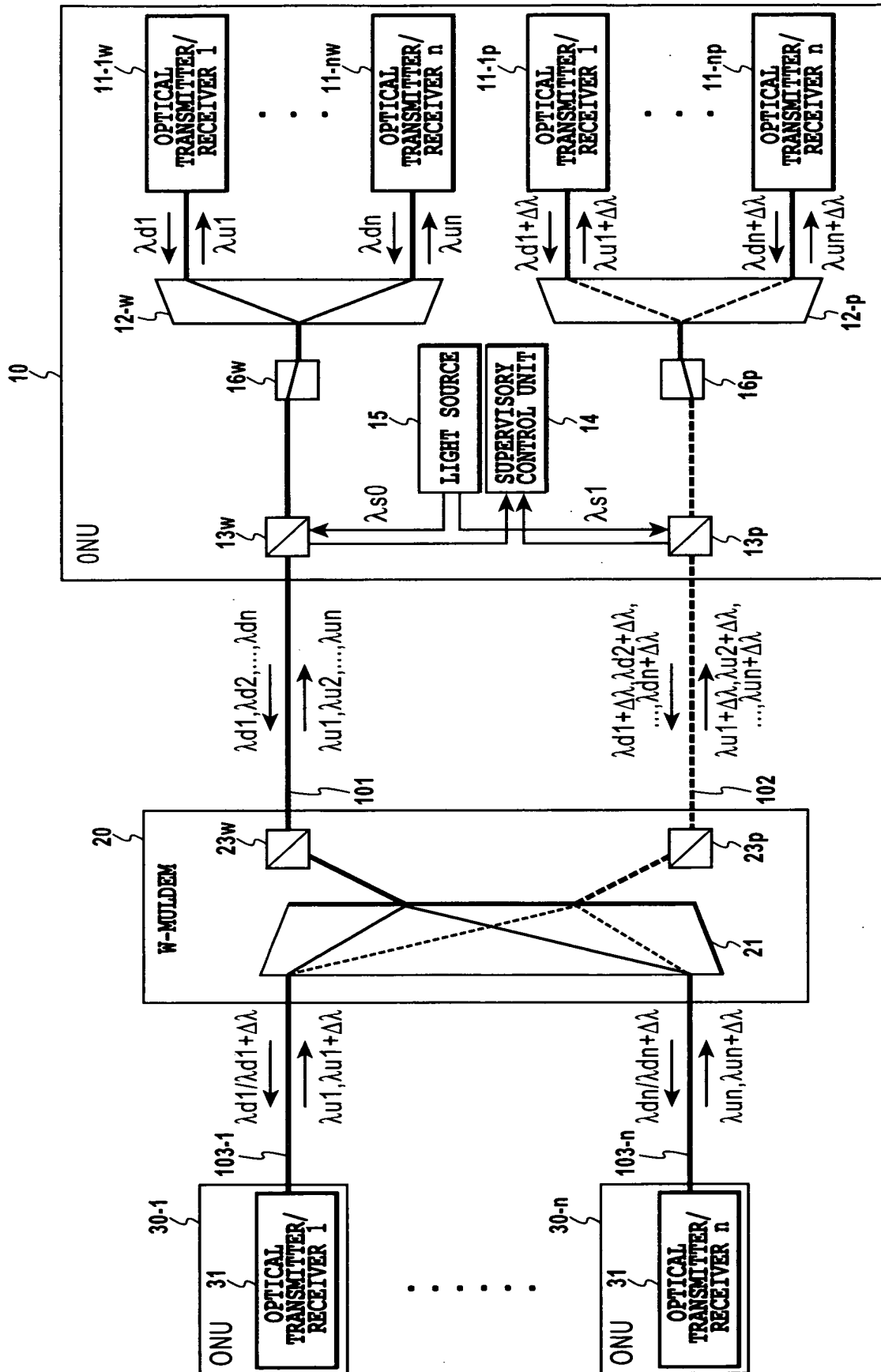


FIG. 6

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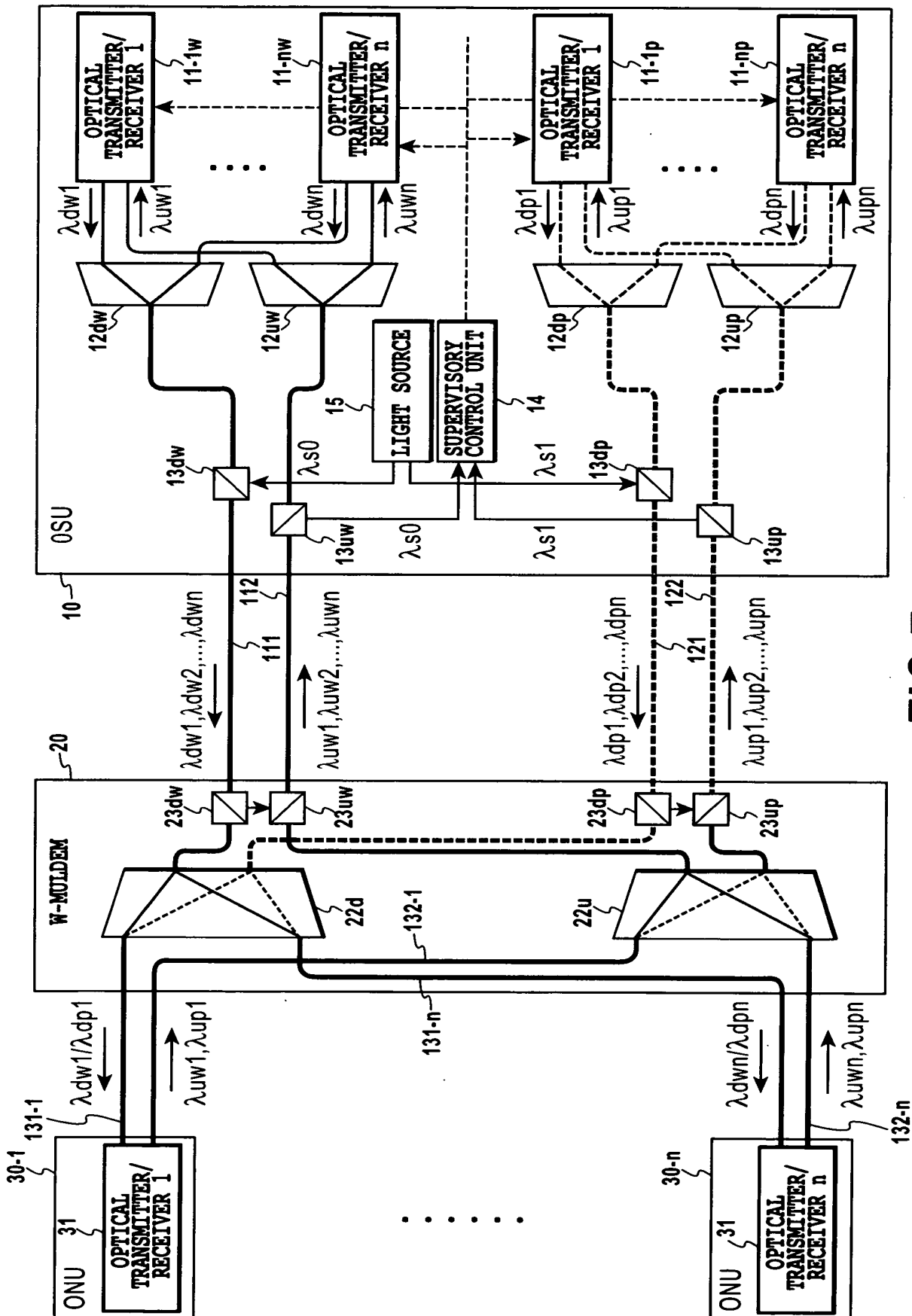


FIG. 7

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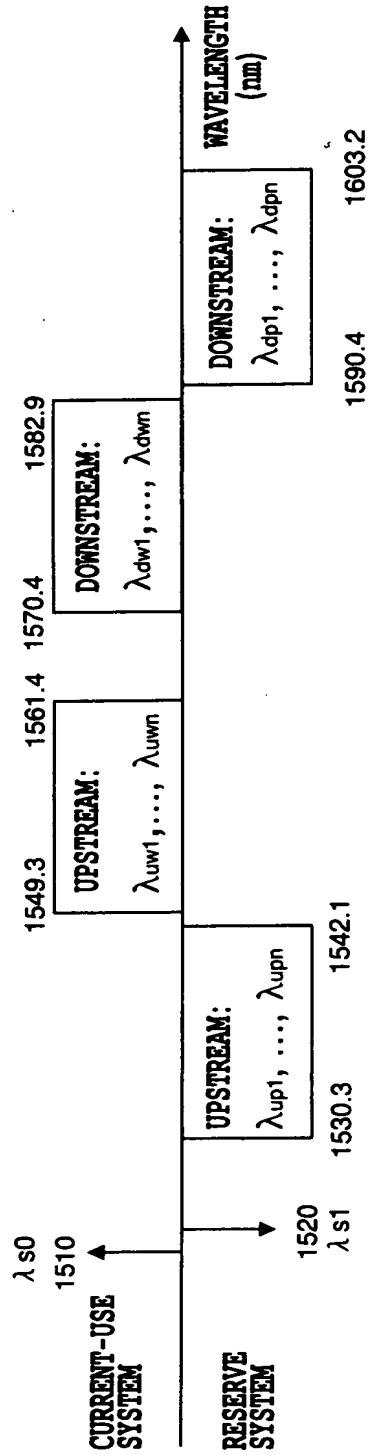


FIG. 8A

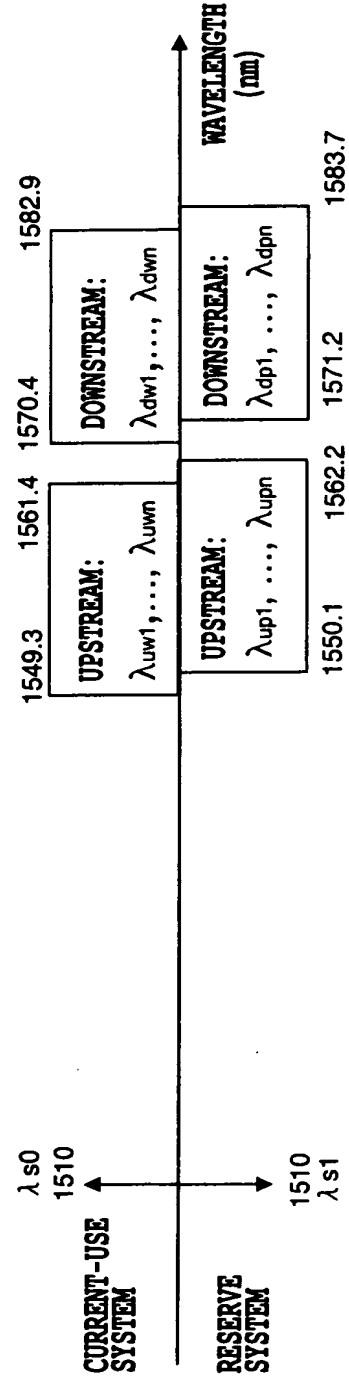


FIG. 8B

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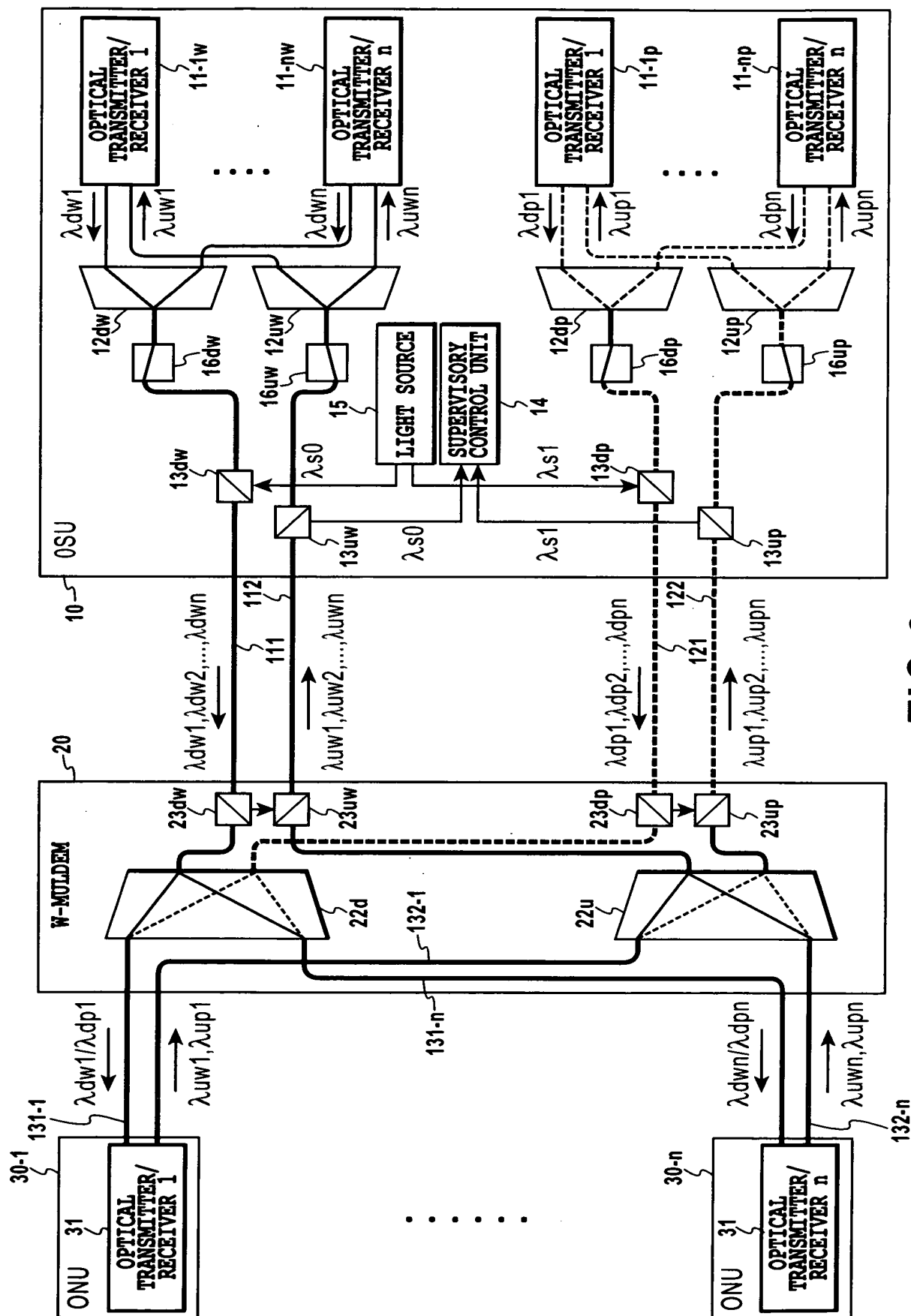
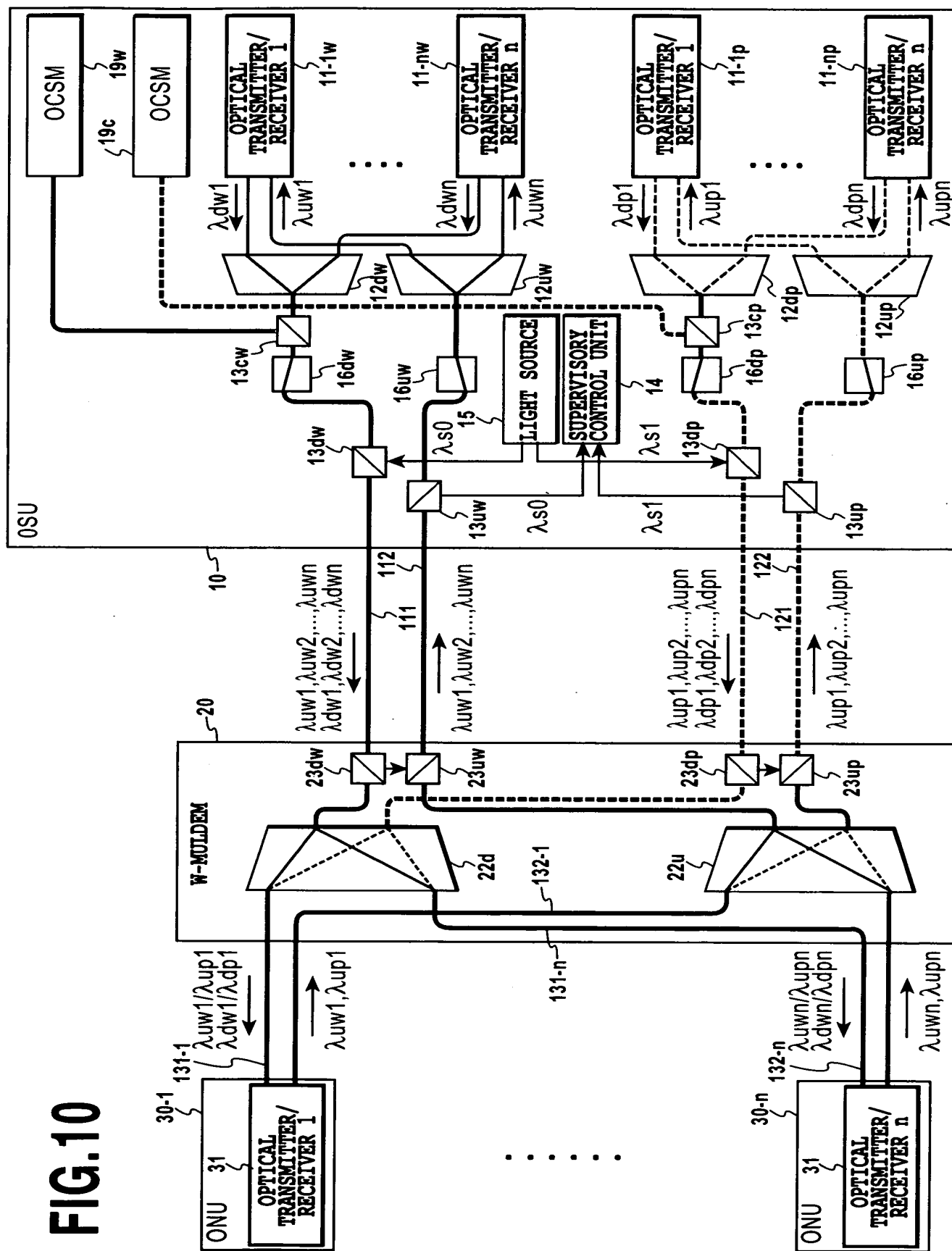


FIG. 9

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FIG. 10



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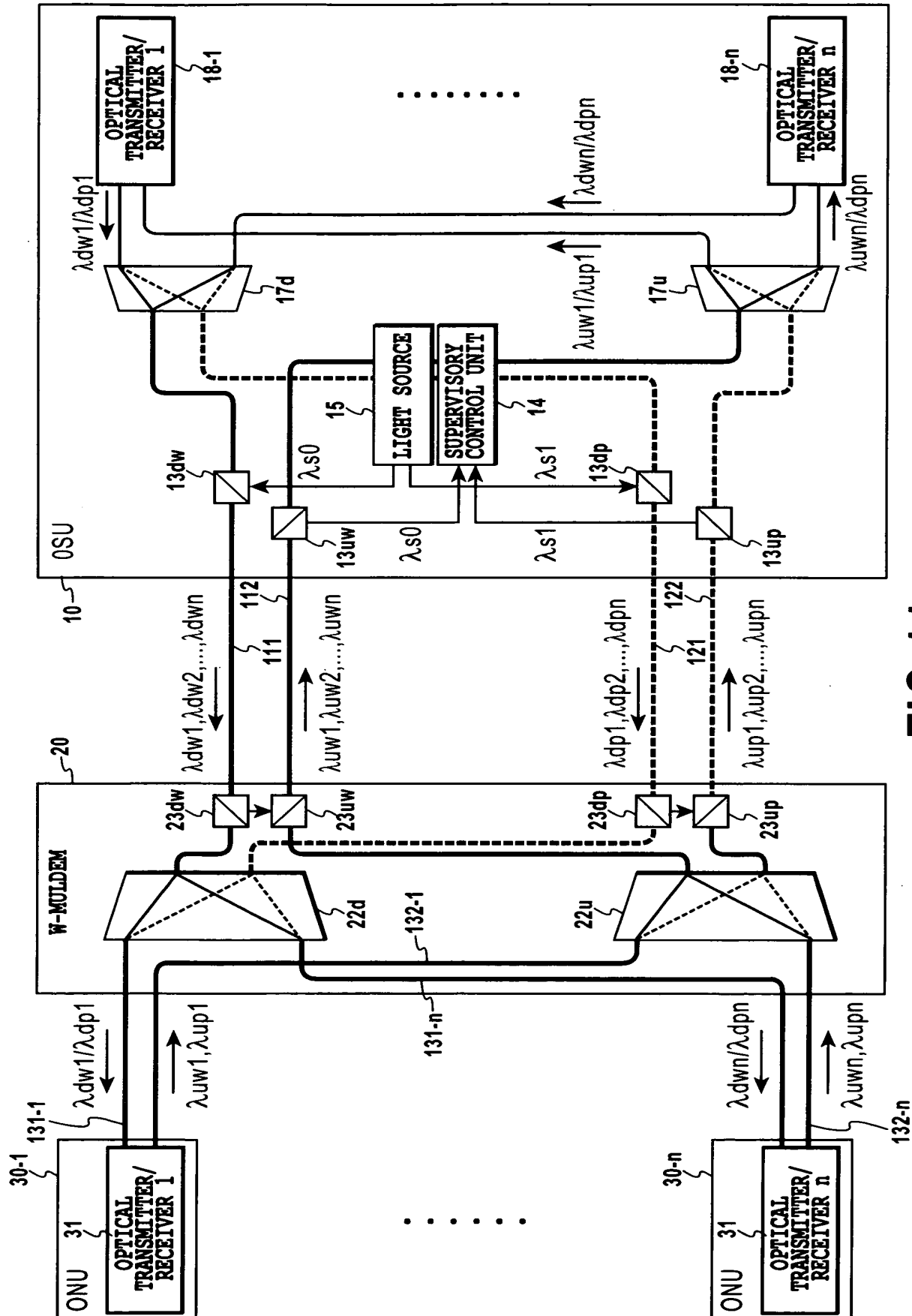


FIG. 11

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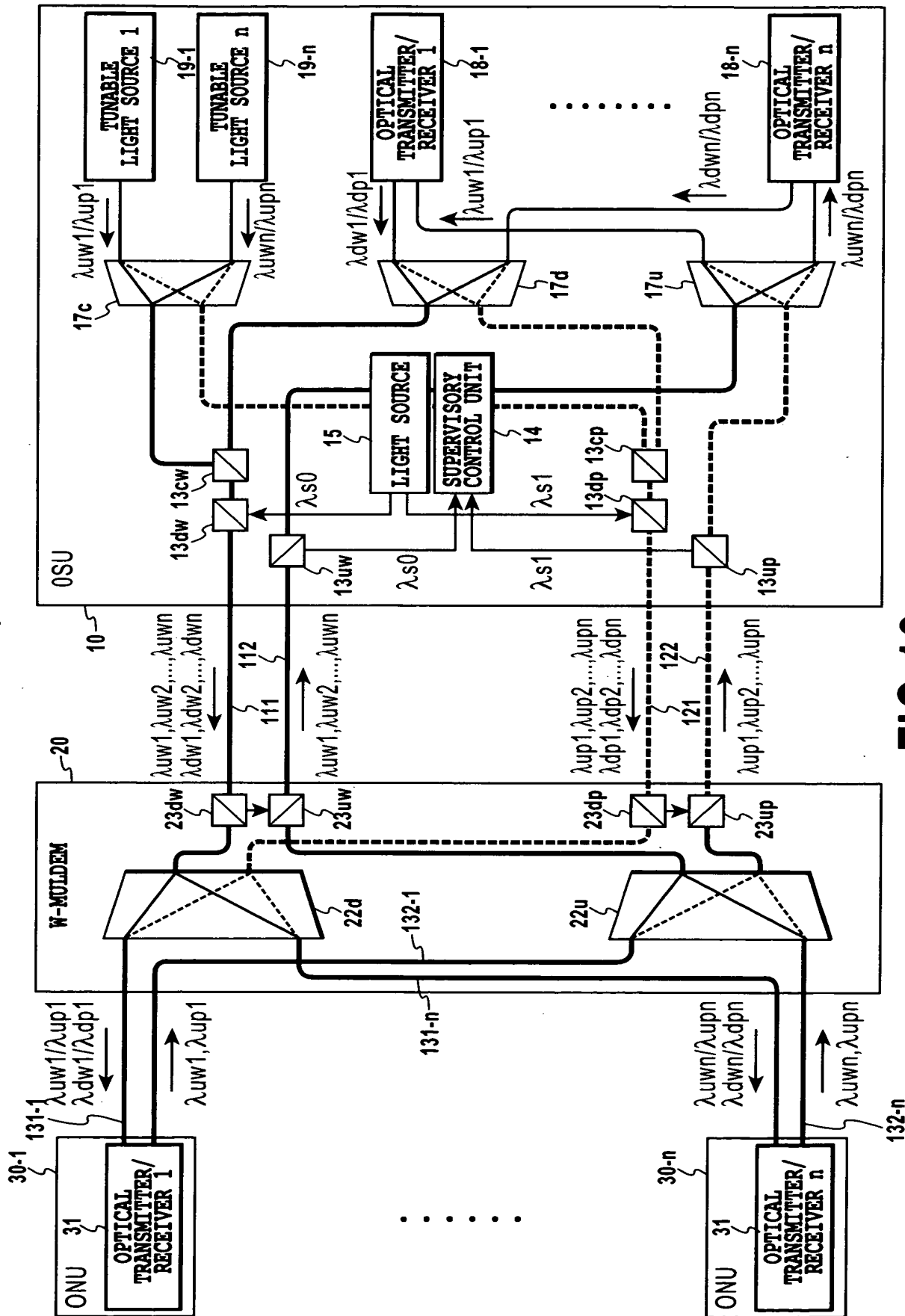


FIG. 12

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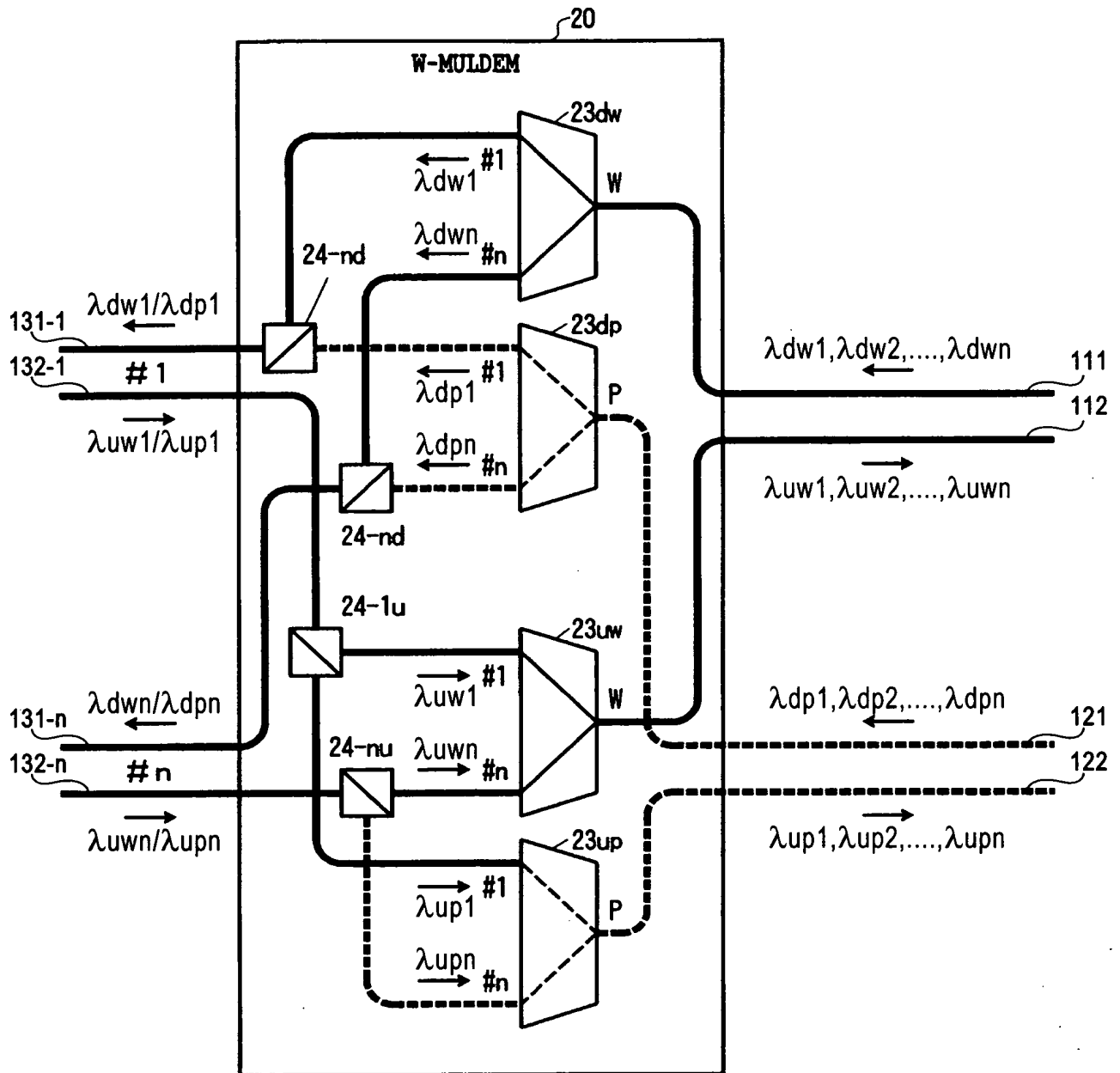


FIG.13

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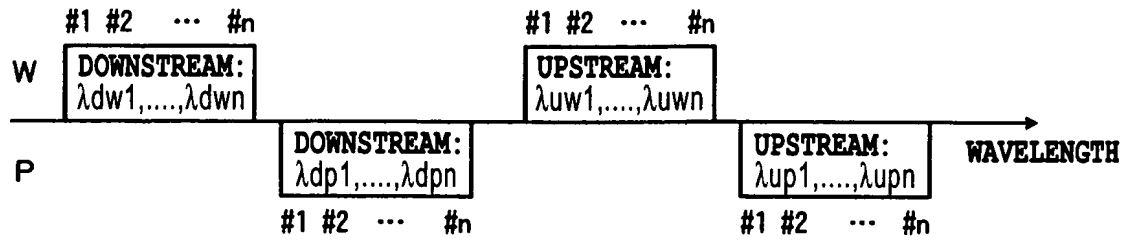


FIG.14A

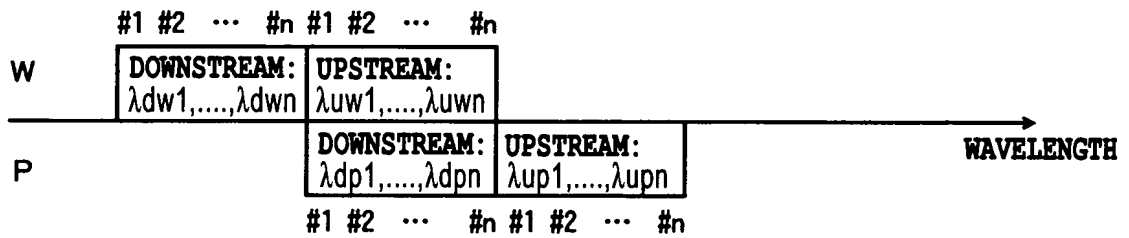


FIG.14B

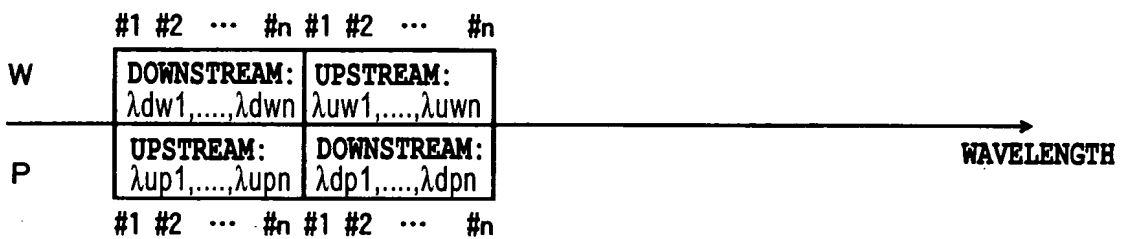


FIG.14C

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	W	P
ONU1	λ_{d1} λ_{u1}	λ_{d33} λ_{u33}
ONU2	λ_{d2} λ_{u2}	λ_{d34} λ_{u34}
\vdots	\vdots	\vdots
ONU32	λ_{d32} λ_{u32}	λ_{d64} λ_{u64}
ONU33	λ_{d33} λ_{u33}	λ_{d1} λ_{u1}
ONU34	λ_{d34} λ_{u34}	λ_{d2} λ_{u2}
\vdots	\vdots	\vdots
ONU64	λ_{d64} λ_{u64}	λ_{d32} λ_{u32}

FIG.15A

	#1 #2 ... #k #k+1 ... #n	#1 #2 ... #k #k+1 ... #n	
W	DOWNSTREAM: $\lambda_{d1} \dots \lambda_{dk}$	$\lambda_{dk+1} \dots \lambda_{dn}$	UPSTREAM: $\lambda_{u1} \dots \lambda_{uk}$
P	DOWNSTREAM: $\lambda_{d1} \dots \lambda_{dk}$	$\lambda_{dk+1} \dots \lambda_{dn}$	UPSTREAM: $\lambda_{u1} \dots \lambda_{uk}$
	#k+1 ... #n	#1 #2 ... #n	#k+1 ... #n

WAVELENGTH

FIG.15B

	#1 #2 ... #k #k+1 ... #n	
W	DOWNSTREAM: $\lambda_{d1} \dots \lambda_{dk}$	$\lambda_{dk+1} \dots \lambda_{dn}$
P	UPSTREAM: $\lambda_{u1} \dots \lambda_{uk}$	$\lambda_{uk+1} \dots \lambda_{un}$
	#k+1 ... #n	#1 #2 ... #k

WAVELENGTH

FIG.15C

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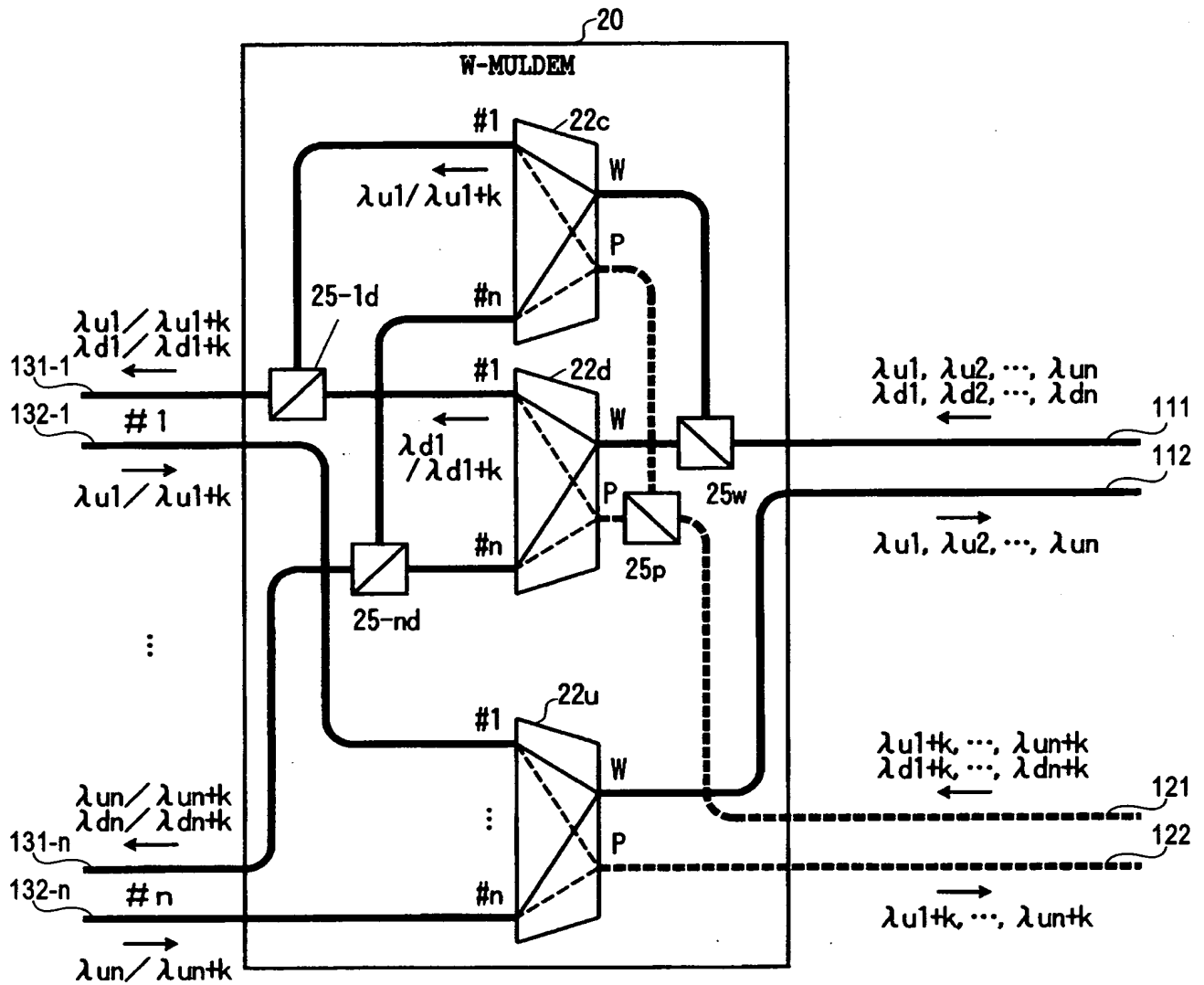


FIG.16

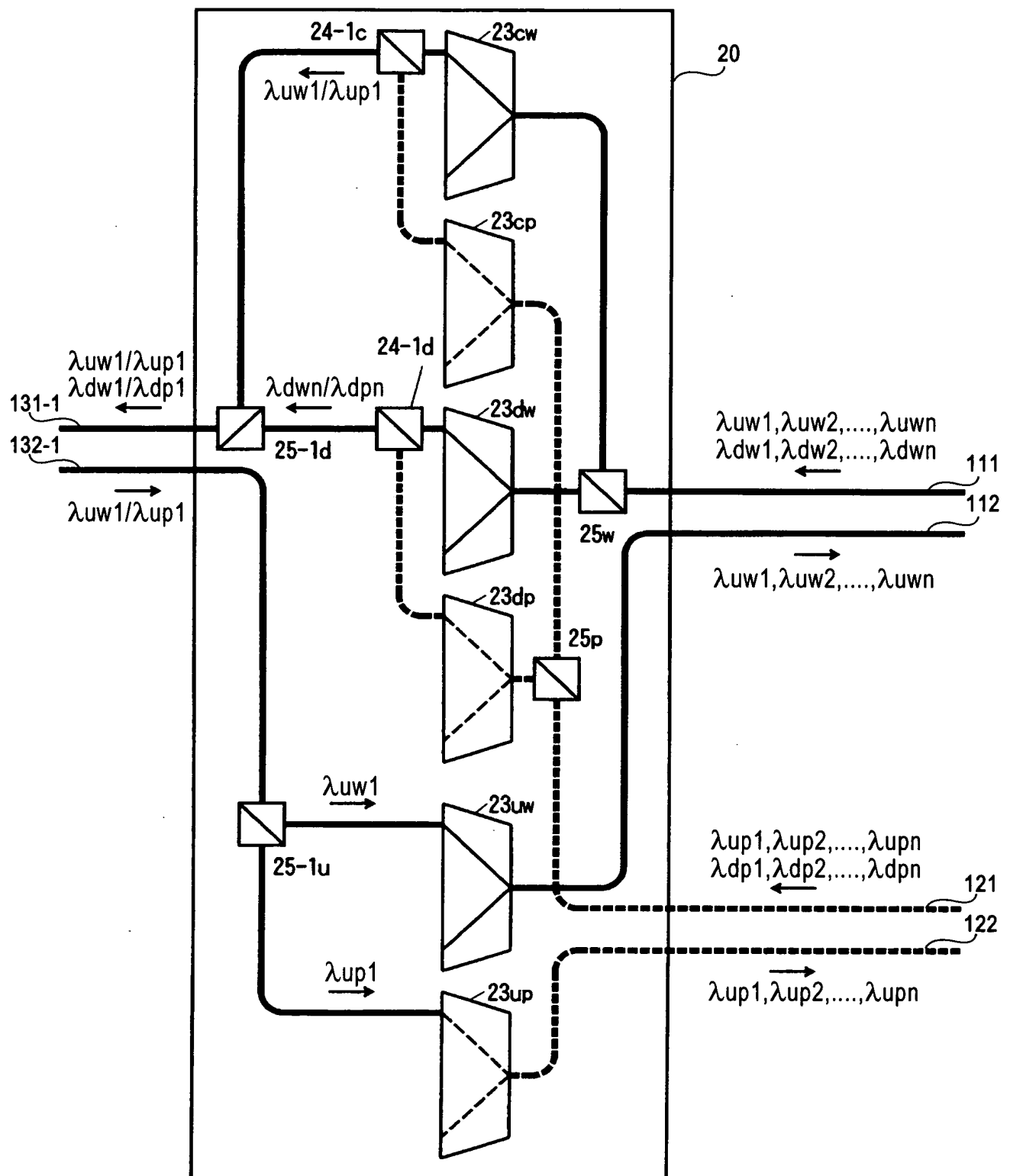


FIG.17

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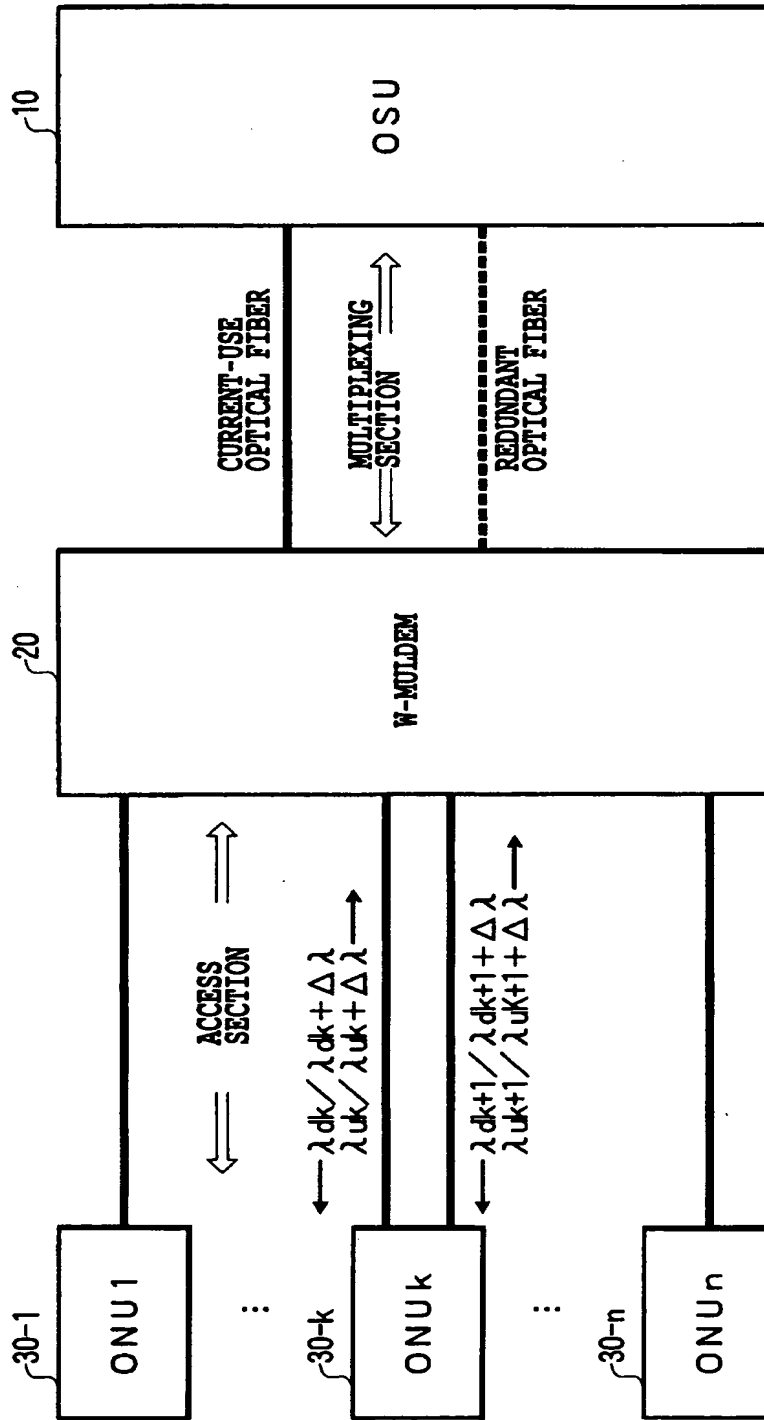


FIG.18

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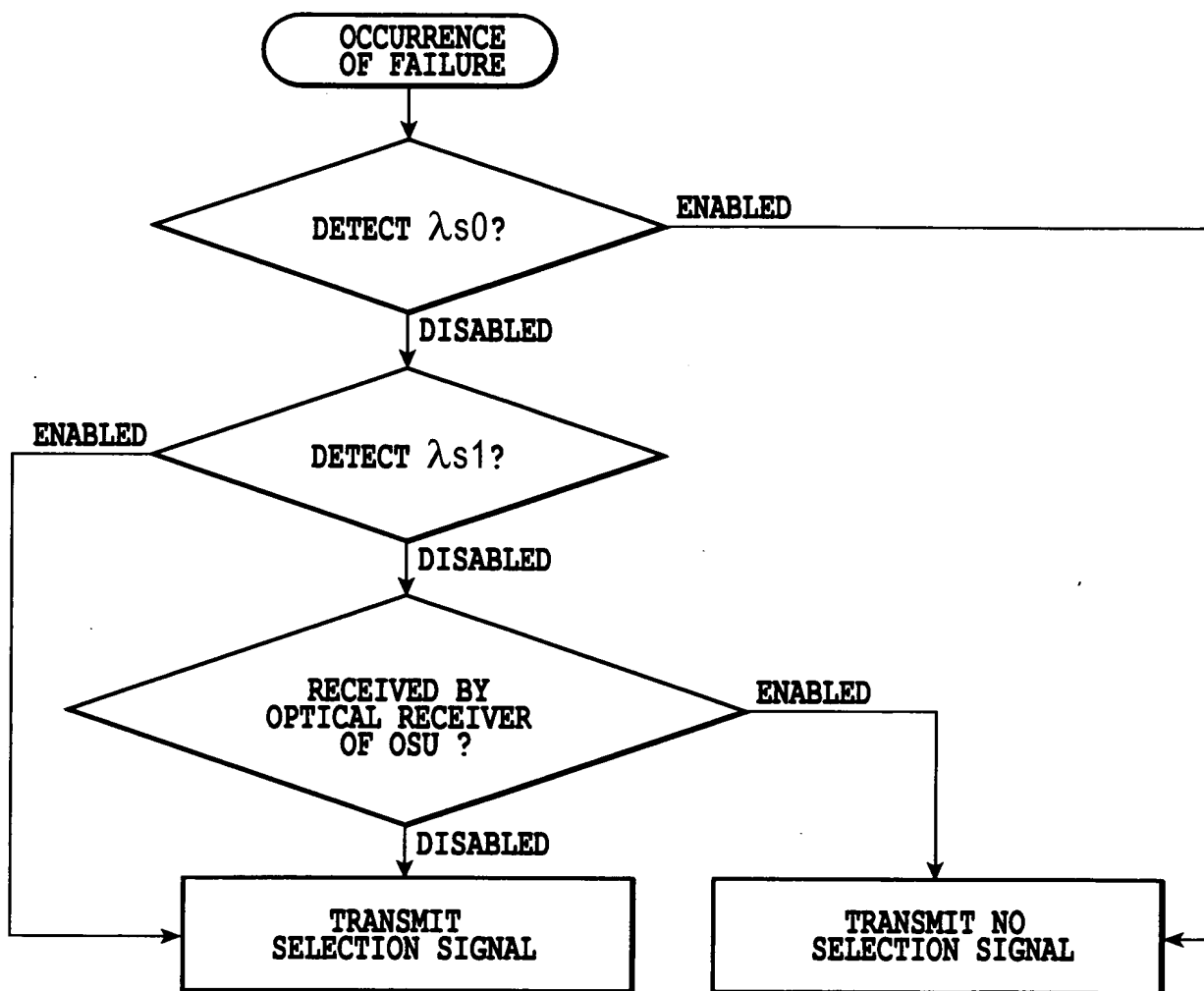


FIG.20

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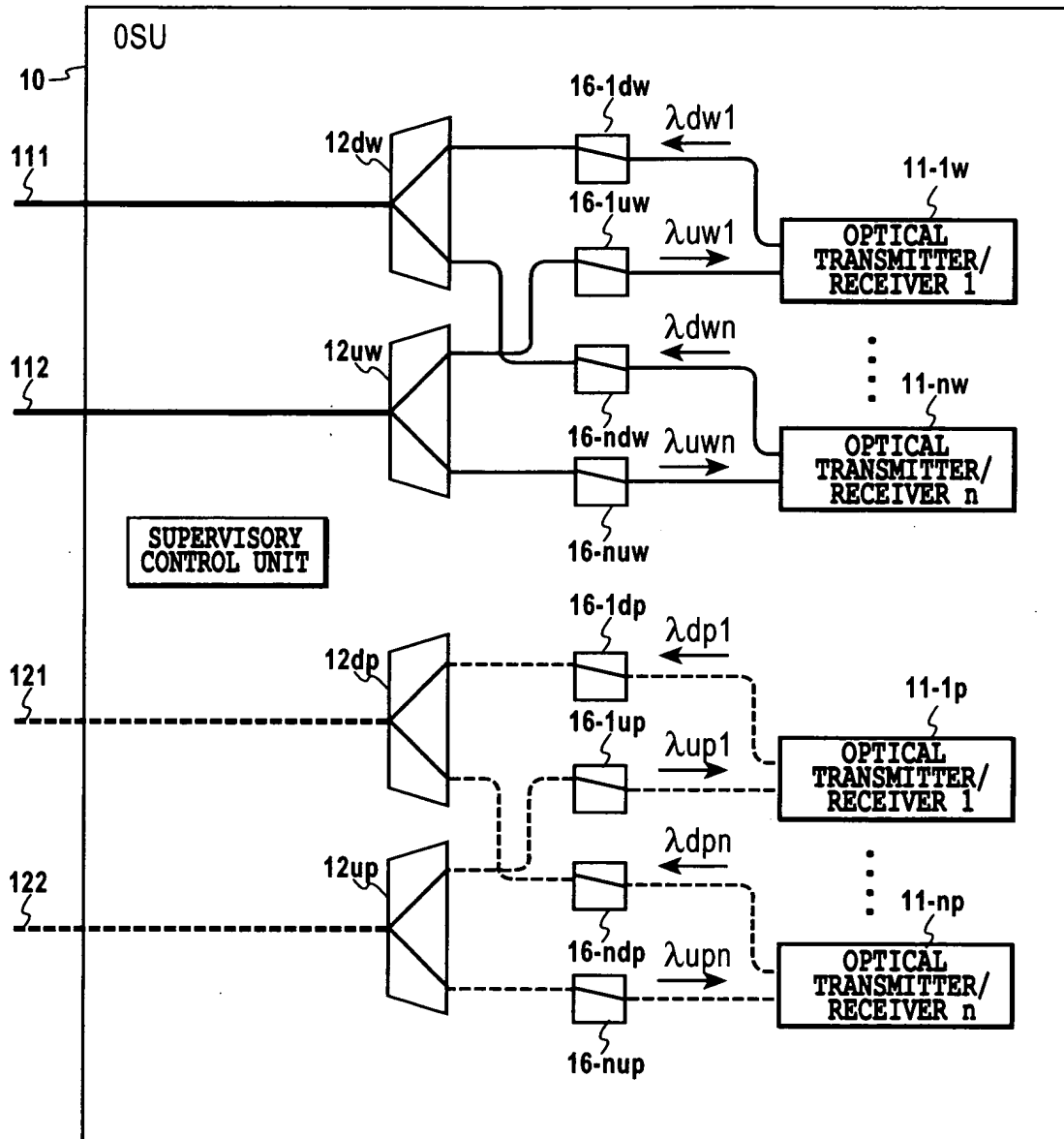


FIG.19

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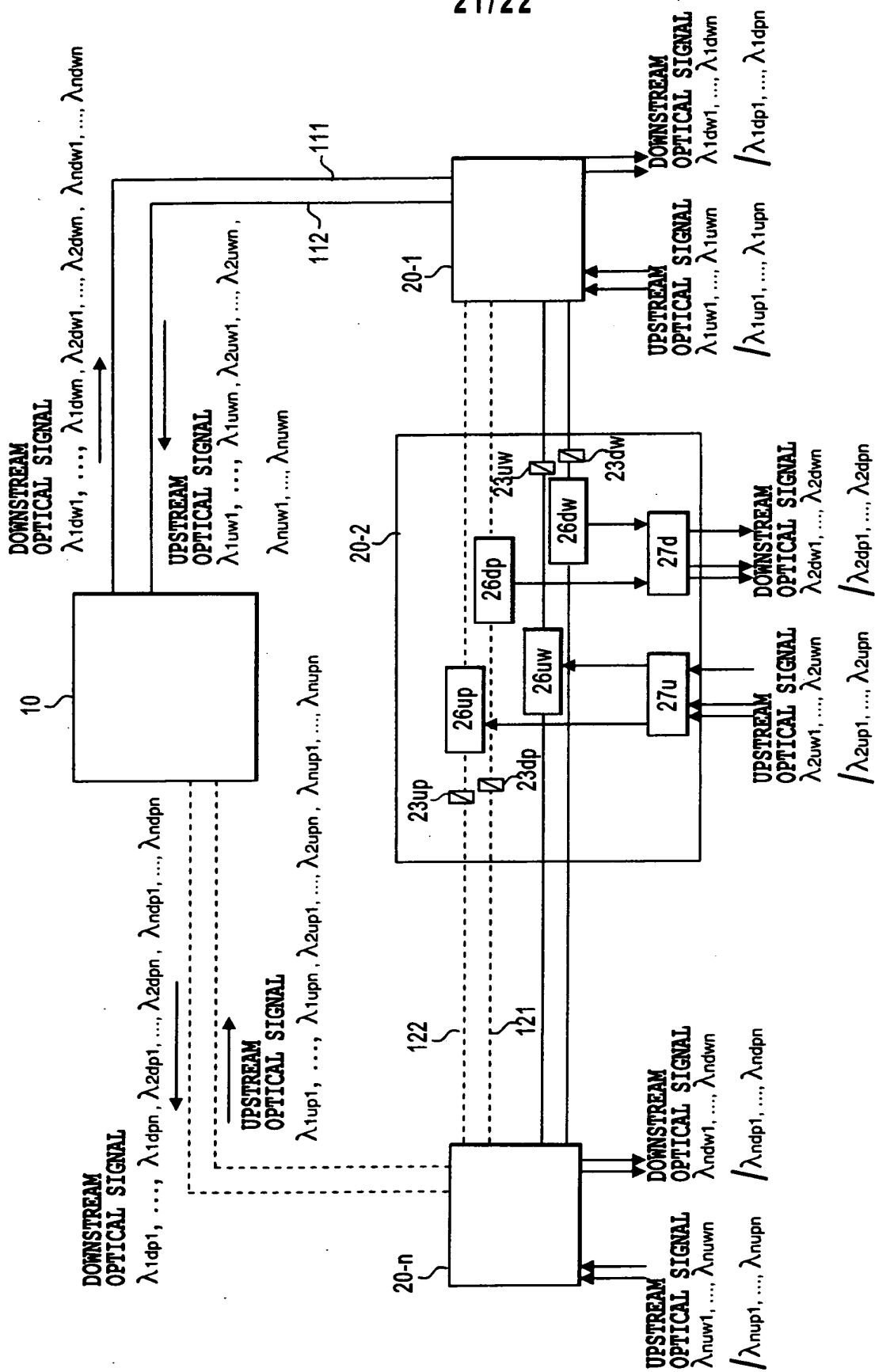


FIG. 21

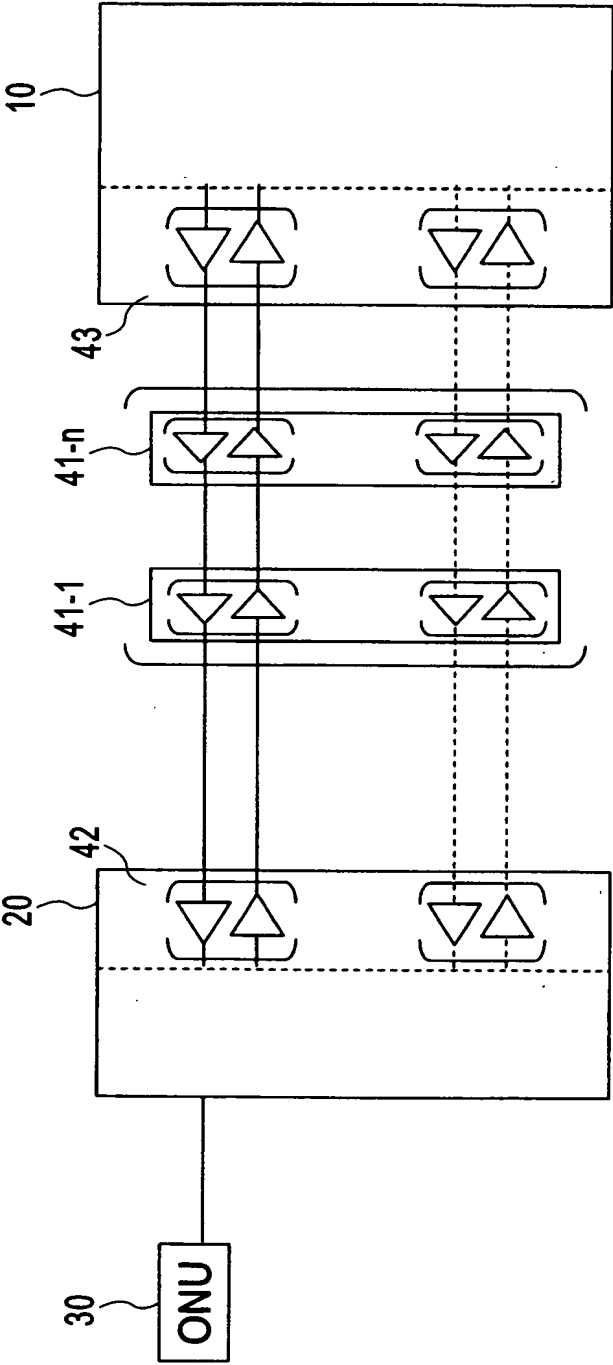


FIG.22